

Problema 3

Determinar x tal que:

a)
$$\frac{2x}{1} - \frac{3x+2}{x} = 0$$

Resolução:

a)
$$\frac{2x}{1} - \frac{3x+2}{x} = 0$$

$$(2x * x) - ((3x + 2)*1) = 0$$

$$2x^2 - (3x + 2) = 0$$

$$2x^2 - 3x - 2 = 0$$

Cálculo das raízes

$$x_1 = \frac{-b + \text{raiz}(\Delta)}{2a} \text{ e } x_2 = \frac{-b - \text{raiz}(\Delta)}{2a}.$$

<i>Cálculo de Δ</i>	<i>Cálculo de X_1</i>	<i>Cálculo de X_2</i>
$\Delta = b^2 - 4ac$	$x_1 = \frac{-b + \text{raiz}(\Delta)}{2a}$	$x_2 = \frac{-b - \text{raiz}(\Delta)}{2a}$
$\Delta = (2)^2 - 4(2)(-2)$	$x_1 = \frac{-(-3) + \text{raiz}(20)}{2.2}$	$x_2 = \frac{-(-3) - \text{raiz}(20)}{2.2}$
$\Delta = 4 - 4(-4)$	$x_1 = \frac{3 + \text{raiz}(20)}{4}$	$x_2 = \frac{3 - \text{raiz}(20)}{4}$
$\Delta = 4 + 16$	$x_1 = \frac{3 + \sqrt{20}}{4}$	$x_2 = \frac{3 - \sqrt{20}}{4}$
$\Delta = 20$		

Portanto, $x = \frac{3 + \sqrt{20}}{4}$ ou $x = \frac{3 - \sqrt{20}}{4}$

Determinar x tal que:

b)
$$\frac{2x}{4x+5} - \frac{x-2}{3x-1} = 11$$

Resolução:

$$b) \quad \frac{2x}{4x+5} - \frac{x-2}{3x-1} = 11$$

$$2x \cdot (3x - 1) - (x - 2)(4x + 5) = 11$$

$$6x^2 - 2x - (4x^2 + 5x - 8x - 10) = 11$$

$$6x^2 - 2x - 4x^2 - 5x + 8x + 10 = 11$$

$$2x^2 + 8x + 10 = 11$$

$$2x^2 + 8x + 10 - 11 = 0$$

$$2x^2 + 8x - 1 = 0$$

Cálculo das raízes

$$x_1 = \frac{-b + \text{raiz}(\Delta)}{2a} \text{ e } x_2 = \frac{-b - \text{raiz}(\Delta)}{2a}.$$

<i>Cálculo de Δ</i>	<i>Cálculo de X_1</i>	<i>Cálculo de X_2</i>
$\Delta = b^2 - 4ac$	$x_1 = \frac{-b + \text{raiz}(\Delta)}{2a}$	$x_2 = \frac{-b - \text{raiz}(\Delta)}{2a}$
$\Delta = (8)^2 - 4(2)(-1)$	$x_1 = \frac{-8 + \text{raiz}(72)}{2 \cdot 2}$	$x_2 = \frac{-8 - \text{raiz}(72)}{2 \cdot 2}$
$\Delta = 64 - 4(-2)$	$x_1 = \frac{8 + \text{raiz}(72)}{4}$	$x_2 = \frac{8 - \text{raiz}(72)}{4}$
$\Delta = 64 + 8$	$x_1 = \frac{8 + \sqrt{72}}{4}$	$x_2 = \frac{8 - \sqrt{72}}{4}$
$\Delta = 72$		

Portanto $x = \frac{8 + \sqrt{72}}{4}$ ou $x = \frac{8 - \sqrt{72}}{4}$

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